Name _____

Math 1
Exam 7

For all problems, show all work. You may use a graphing calculator. Do not round. If you use scratch paper, turn it in along with the exam. Good luck. ☺

For the first two problems, use the following information:

> Let a and b be positive real numbers with $a < b$. Consider the quadrilateral with vertices $(a, 0)$, $(b, 0)$, $(0, b)$, and $(0, a)$.

1. (7A) Determine the perimeter and area of the quadrilateral in terms of a and b.

2. (C3, 7C) Prove that the quadrilateral is a trapezoid.

3. (7E) If $\vec{v} = \langle 4, 3 \rangle$ and $\vec{w} = \langle 1, 2 \rangle$, determine $3\vec{v} - 5\vec{w}$ and $\|3\vec{v} - 5\vec{w}\|$.

4. (7A) Determine the area of the triangle with vertices at $(-1, 2)$, $(4, 0)$, and $(3, 5)$. (This problem may also address 7E and/or 7G.)

5. (7B) Determine the equation for the set of all points that are 11 units away from the point $(7, -4)$.

6. (7D) Susie is trying to determine the equation of a graph. One of the equations that she tried was $y = x^3$. She noticed that, to get from the graph of $y = x^3$ to the graph that she was given, she needs to translate two units to the right and one unit up. Determine the equation of the original graph. (You need not simplify: Parentheses are permissible in the answer.)

7. (7F and 7G) Use an inverse matrix to solve the following system of equations:

$$\begin{cases} 13x + 7y &= 8 \\ 3x + 5y &= 1 \end{cases}$$